

ABSTRACT

To provide a unit-layer post-treatment catalyst  
vapor-deposition apparatus and unit-layer post-treatment  
film forming method capable of improving in-face uniformity,  
5 step coverage, and film quality of a silicon nitride film or  
the like and forming a thin film by performing surface treatment  
after forming a film for each unit layer.

A thin film post-treated for each unit layer is laminated  
by using a film forming step of introducing mixed gas of silane  
10 gas and ammonia gas into a reactive vessel 2 as a source gas  
like a rectangular pulse and contacting with and  
thermal-decomposing the source gas by a catalyst body 8, and  
forming a silicon nitride film on a substrate 5, one surface  
treating step of bringing ammonia gas into contact with the  
15 catalyst body 8 and then bleaching the ammonia gas on the surface  
of a silicon nitride film on the substrate 5 and other surface  
treating step of bleaching hydrogen gas on the surface of the  
silicon nitride film on the substrate 5 after bringing hydrogen  
gas into contact with the catalyst body 8 as one cycle and  
20 repeating the step of one cycle.